

CLAIMS

What is claimed is:

1. A mirror assembly comprising:

a case frame 30 defining a concave surface 38, said case frame
5 30 including a retention post 40 having an elongated tip 42;

a backing plate 54 including a support surface 88 and a dish
portion 56 having a center opening 58, said backing plate 54 being positioned
against the case frame 30 so that the dish portion 56 cooperates with the
concave surface 38 and the post 40 extends through the center opening 58 in
10 the dish portion 56;

a retention ring 66, said retention ring 66 including a center slot
68 and a locking portion 72,74,76, said retention post 40 extending through
the center slot 68 so that the tip of the post 40 is engaged with the locking
portion 72,74,76; and

15 a mirror glass 86 mounted to the support surface 88 of the
backing plate 54, wherein the backing plate and the mirror glass 86 can be
manually positioned by pivoting the dish portion 56 on the concave surface
38.

20 2. The mirror assembly according to claim 1 wherein the locking
portion 72,74,76 includes opposing cam ramps 72,74 and a détente 76 that
accepts the elongated tip 42, wherein the retention ring 66 is secured to the
mirror assembly 10 by inserting the retention post 40 through the slot 68,

rotating the retention ring 66 so that the tip rides along the ramps 72,74 until the tip is positioned in the détente 76.

3. The mirror assembly according to claim 1 wherein the retention
5 ring 66 further includes at least one spring element 78, said at least one
spring element 78 applying pressure against the dish portion 56 when the
retention ring 66 is locked to the backing plate 54.

4. The mirror assembly according to claim 3 wherein the at least
10 one spring element 78 is four symmetrically disposed leaf spring elements 78
extending from a rim 80 of the retention ring 66.

5. The mirror assembly according to claim 1 wherein the retention
ring 66 further includes an extended neck portion 70, said retention post 40
15 extending through the neck portion 70.

6. The mirror assembly according to claim 1 wherein the retention
ring 66 is a single piece plastic member.

20 7. The mirror assembly according to claim 1 wherein the case
frame 30 includes at least one spacing member 46 having a slot 48 and the
backing plate 54 includes an opening 60 and an alignment arm 64 extending

across the opening 60, and wherein the alignment arm 64 is positioned within the slot 48 of the spacing member 46.

8. The mirror assembly according to claim 1 wherein the post 40 is
5 a T-shaped post.

9. The mirror assembly according to claim 1 wherein the spherical surface 38 of the case frame 30 is defined by members 32,34,46,50 extending from the case frame 30.

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10. The mirror assembly according to claim 1 wherein the retention ring 66 includes a plurality of openings 82 for accepting a tool to rotate the ring 66 within the dish portion 56.

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11. The mirror assembly according to claim 1 wherein the case frame 30 is an internal support structure of a side mirror of a vehicle 12.

12. The mirror assembly according to claim 11 wherein the mirror assembly 10 is a spotter mirror assembly associated with the side mirror.

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13. A vehicle side spot mirror assembly comprising:

an internal case frame 30 including members defining a concave surface 38, said case frame 30 further including a T-shaped retention post 40 having an elongated tip 42;

5 a backing plate 54 including a support surface 88 and a dish portion 56 having a center opening 58, said backing plate 54 being positioned against the case frame 30 so that the dish portion 56 cooperates with the concave surface 38 and the post 40 extends through the center opening 58 in the dish portion 56;

a single piece plastic retention ring 66, said retention ring 66
10 including a center slot 68, a plurality of symmetrically disposed spring elements 78, a neck portion 70 and a cam locking system 72,74,76 including opposing cam ramps 72,74 and a détente 76 that accepts the elongated tip 42, said retention post 40 extending through the neck portion 70 and the center slot 68 so that the tip 42 of the post 40 is engaged with the locking
15 system 72,74,76 and the spring elements 78 apply pressure against the dish portion 56, wherein the retention ring 66 is secured to the mirror assembly by inserting the retention post 40 through the center slot 68 , rotating the retention ring 66 so that the tip 42 rides along the ramps 72,74 until the tip 42 is locked in the détente 76; and

20 a mirror glass 86 mounted to the support surface 88 of the backing plate 54, wherein the backing plate 54 and the mirror glass 86 can be manually positioned by pivoting the dish portion 56 on the concave surface.

14. The mirror assembly according to claim 13 wherein the case frame 30 includes at least one spacing member 46 having a slot 48 and the backing plate 54 includes an opening 60 having an alignment arm 64 extending across the opening 60, and wherein the alignment arm 64 is
5 positioned within the slot 48.

15. The mirror assembly according to claim 13 wherein the retention ring 66 includes a plurality of openings 82 for accepting a tool to rotate the ring 66 within the dish portion 56.

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16. A method of directing a mirror, said method comprising:
providing a case frame 30 including a concave surface 38 and a retention post 66 having an elongated tip 42;
providing a backing plate 54 including a support surface 88 and
15 a dish portion 56 having a center opening 58;
positioning the backing plate 54 against the case frame 30 so that the dish portion 56 cooperates with the concave surface and the post 40 extends through the opening 58 in the dish portion 56;
providing a retention ring 66 including a center slot 68, at least
20 one spring element 78 and a locking portion 72,74,76;
positioning the retention ring 66 so that the retention post 40 extends through the center slot 68;

rotating the retention ring 66 so that the tip 42 of the post 40 engages the locking portion 72,74,76 and the at least one spring element 78 applies pressure against the dish portion 56;

mounting a mirror glass 86 to the support surface 88 of the
5 backing plate 54;

adjusting the position of the backing plate 54 and the mirror glass 86 by pivoting the dish portion 56 on the concave surface 38.

17. The method according to claim 16 wherein providing a retention
10 ring 66 includes providing opposing cam ramps 72,74 and a détente 76 that accepts the elongated tip 42.

18. The method according to claim 16 wherein providing a retention
ring 66 includes providing four symmetrically disposed spring elements 78
15 extending from a rim 80 of the retention ring 66.

19. The mirror assembly according to claim 16 wherein providing a retention ring 66 includes providing a single piece plastic member.

20. The mirror assembly according to claim 16 wherein providing a
20 case frame 30 includes providing a case frame 30 having at least one spacing member 46 with a slot 48 and providing a backing plate 54 includes providing a backing plate 54 having an opening 60 with an alignment arm 64 extending

across the opening 60, said method further comprising positioning the alignment arm 64 within the slot 48.